Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

CLINTON[8] has described the fifty species of smuts known to occur in Connecticut, introducing the descriptions by a general account of the characters of the group. Numerous drawings and reproductions of photographs illustrate the paper.—J. M. C.

SCHAFFNER[9] and his associates have made an ecological study of a glacial lake near Columbus, Ohio. Many of the typical bog plants, such as sphagnum, are absent; but some, as Decodon, are present in abundance.—H. C. COWLES.

OSGOOD,[10] in an account of a reconnoissance in Alaska mainly concerned with birds and mammals, gives notes on the distribution of the more characteristic plants that will interest plant geographers.—H. C. COWLES.

NOTES FOR STUDENTS.

FAULL[11] has made a cytological investigation of the ascus, studying the origin of the asci from the ascogenous hyphae, and their nuclear divisions and spore formations in a number of hitherto uninvestigated Ascomycetes, particularly *Hydnobolites* sp., *Neotiella albocincta*, and *Sordaria finicola*. He has examined thirty-six species in order to determine how the ascus originates from the ascogenous hyphae. He finds numerous cases in which the ascus does not arise from the penultimate cell of the recurved tip of an ascogenous hypha, as described for various Discomycetes but not for mildews. MAIRE and GUILLIERMOND have fully described deviations from this type, and FAULL in his examination finds that such is invariably the case in only eleven species. The ascus may bud out from the penultimate cell, although occasionally the septum between it and the terminal cell is lacking. The absence of this wall cutting off a uninucleate terminal cell at the tip seems to be the most frequent departure from the conventional type, being well illustrated by *Genea hispidula*, in which form the wall is always wanting. In some forms the asci arise from the terminal cell of the ascogenous hyphae and in others apparently from any cell. In every case definitely determined, the uninucleate stage of the ascus arises by fusion of two nuclei, which may be daughter nuclei or sister nuclei, either before or after entering the ascus. Extranuclear granules, staining like nucleoli and evidently nutritive in character, were observed in the neighborhood of nuclei in the asci. The constant appearance of these bodies is a characteristic feature at different stages. Similar bodies were also observed in ripe spores.

---

[8] CLINTON, GEORGE PERKINS, The Ustilagineae, or smuts, of Connecticut. State Geol. and Nat. Hist. Survey, Bull. 5. pp. 45. *figs. 55*. 1905.

[9] SCHAFFNER, J. H., JENNINGS, O. E., and TYLER, F. J., Ecological study of Brush Lake. Proc. Ohio State Acad. Sci. **4**:151–165. 1904.

[10] OSGOOD, W. H., A biological reconnoissance of the base of the Alaska Peninsula. Pp. 86. *pls. 5. maps 2.* North American Fauna No. 24. Washington. 1904.

[11] FAULL, J. H., Development of ascus and spore formation in Ascomycetes. Proc. Bos. Soc. Nat. Hist. **32**:77–113. *pls. 7–11.* 1905.

This author believes that the spindles are of intranuclear origin, while the centrosomes and asters with which they are associated are of extranuclear origin. The nucleus occupies the dense cytoplasm which becomes differentiated about it. In Neotiella and Sordaria the protoplasm about the exceedingly large nucleus streams out irregularly into the foamy cytoplasm above and below; while the nucleus of Hydnobolites is surrounded by a hyaline area possessing a radiate structure. The fibers of the broad spindle taper in Neotiella and Sordaria to terminate in two very minute centrosomes, from which radiate very fine rays, often so fine as not to be easily demonstrable. The astral rays in Hydnobolites are long and coarse and easily observed. These rays stain differently from the centrosome, and there is no evidence that they are outgrowths from or that they are absorbed by the centrosome at the time of their disappearance. In Hydnobolites the chromosomes are very small, while those of Neotiella are large horse-shoe-shaped bodies. The number of chromosomes may vary in different species, being four or five in Hydnobolites and six or seven in Neotiella. The method of spore formation is particularly interesting, as it does not at all correspond with that described by HARPER. A plasma membrane is organized about the spore-plasm before the nuclei pass into a resting condition. This membrane is formed entirely distinct from the astral rays, which do not appear to enter into its composition. The long thick astral rays of Hydnobolites change position, but so as to be thrown farther apart. A fusion is an impossibility. These rays may be seen distinctly even after the spores are delimited. The sporeplasm is delimited from the rest of the cytoplasm by the differentiation of a certain hyaline finely granular area. This specialized hyaline layer of protoplasm begins just outside the centrosome and proceeds progressively until it entirely encloses the sporeplasm. A plāsma membrane is subsequently formed from or in this limiting area. Concurrently with this first membrane a second membrane is formed in contact with the first, which lines the cavity in which the spore is to lie. FAULL suggests that these membranes may arise by a cleavage in the limiting area, caused by its increased growth and differentiation and a pull on the part of the nucleus. Both plasma membranes are intimately concerned in laying down the spore walls between the opposed membranes. The time of the formation of the spore walls is variable in the different species and bears no relation to the delimitation of the sporeplasm. Multinucleate spores are usually septate, but those of Sordaria are unseptate. The multinucleate condition arises, at least in Sordaria, by karyokinetic division of the nucleus of the spore. Where a septum is formed cutting off an enucleated portion, as the tail of the Podosporas, its organization is due to the direct action of the nucleus on the cytoplasm, since septa are formed only in the immediate neighborhood of nuclei. The author favors the view that homologizes the ascus with a zoosporangium of the Oomycetes, as an argument in favor of the origin of the Ascomycetes from the Oomycetes. He does not believe that the difference between the method of spore formation in the ascus and sporangium is so great as to prevent an assumption of their homology.—J. B. OVERTON.

WASIELEWSKI[12] has undertaken by theory and by his own experimental data to dispel what he calls the "Mitosendogma" of HEGLER. This so-called dogma consists in a discrimination between mitosis and amitosis, in which the former is regarded as the only process by which nuclear division can be accom plished and the potential qualities retained. According to this view, fragmentation of the nucleus is held without exception to involve loss of regeneration capacity. According to the author this dogma ignores the fact that amitosis is just as normal for many lower organisms as mitosis is for the higher. Further, the idea that the nucleus is the bearer of the hereditary qualities is a theory only, though so widely accepted as to be regarded often as a fact. A study of the influence of chloral hydrate, especially, on nuclear and cell division leads the author to conclude that both may occur amitotically in higher plants. This tendency to amitosis apparently dormant may be aroused by stimulants. Degeneration as a consequence of amitosis was not observed, and cells so divided can resume mitotic divisions without loss of capacity for development. Two modes of amitotic nuclear divisions were observed: *Diatmese* (dissection) and *Diaspase* (distraction). Thus, the latter are regarded as members in a phylogenetic series which includes mitosis and from which amitosis does not fundamentally differ. In the second section the author goes so far as to state that a given nucleus may begin its division mitotically and complete it amitotically. The physiological equivalence of mitosis and amitosis is advocated. NĚMEC's paper, in which the author is believed to have confused amitosis with nuclear fusion, appeared after this second section had gone to press. The author promises a paper in which this matter will be considered.—RAYMOND H. POND.

A RECENT PAPER by LONGO[13] describes the nutrition of the embryo sac in the Cucurbitaceae, especially in *Cucurbita Pepo*. The principal point of interest is the behavior of the pollen tube, which, after discharging the usual function connected with fecundation, serves as an organ of food absorption. About the time the pollen tube reaches the embryo sac, an enlargement occurs in it a short distance from its extremity. After fertilization, slender branch-like outgrowths proceed from the enlargement and grow along the nucellus to enter a specialized region of the outer integument. This region is composed of cells containing food material, as starch, which is extracted by the haustorial prolongations of the pollen tube. In the meantime the epidermis of the nucellus, or its outermost layer of cells, becomes cuticularized and the cells near the chalaza become suberized. Thus it would seem that the path of the food material is through the vascular bundle of the outer integument to the nutritive tissue, and from thence to the embryo through the haustorial prolongations and the pollen tube. The remainder of the paper is occupied (1) with an account of the changes that occur

[12] WASIELEWSKI, W. VON, Theoretische und experimentelle Beiträge zur Kenntniss der Amitose. Jahrb. Wiss. Bot. **38**:377–420; **39**:581–606. *figs. 10.* 1904.

[13] LONGO, BIAGIO, Osservazioni e ricerche sulla nutrizione dell'embrione vegetale. Annali Botanica **2**:373–396. 1905.

in the endosperm and integuments during seed development; and (2) with reviews of various papers dealing with different methods of embryo sac nutrition. While LONGO'S paper was in press, that of KIRKWOOD[14] appeared. A footnote by LONGO states that his observations and KIRKWOOD'S do not agree in respect to the presence of a micropyle and the passage of the pollen tube through it in *Cucurbito Pepo*. LONGO maintains that in this species no micropylar canal is present, but that the pollen tube grows between the cells of the nucellus. As a micropyle is present in other species, he thinks KIRKWOOD has made a mistake in determination.—F. H. BILLINGS.

TWO INVESTIGATORS have published preliminary announcements of the results of a study of fertilization and the associated structures in *Juniperus communis*. NORÉN[15] says that during the summer following pollination the pollen tube grows into the tissues of the nucellus, but fertilization does not occur until the following year. The two male cells are equal in size. A ventral canal nucleus is formed, but it is not separated from the egg by a wall. The male cell is still surrounded by its cytoplasm when it enters the egg, but slips out from it as the sex nuclei come into contact. There are eight free nuclei in the proembryo before walls begin to be formed.

SLUDSKY'S[16] announcement was hastened by that of NORÉN. He reports that the entire development of the sexual generation, from pollen to fertilization, and from megaspore to embryo, lasts only one summer; the growth of the pollen tube lasting only two to six weeks. A ventral canal nucleus is formed, but disappears before fertilization. Centers with radiations are prominent in the egg; and are caused by the diminishing pressure which accompanies the formation of vacuoles. There are never more than two male cells in a pollen tube. The multicellular complex described for Cupressus by JUEL is regarded as due to abnormal material. Not more than two male cells ever enter the egg, and only one functions in fertilization. The nucleus of the male cell is still surrounded by its cytoplasm after it enters the egg. During fertilization there can be seen in the upper part of the egg the tube nucleus, neck cells, and even cells of the overlying tissue. In regard to the fusion of sex nuclei, the author agrees with NORÉN, and in regard to the embryo he agrees with STRASBURGER.—C. J. CHAMBERLAIN.

LILIENFELD[17] ascribes the indecisive results obtained by NEWCOMBE and RHODES in their study of the chemotropism of roots to inadequate methods. Among the sources of error unprovided for by them the author mentions (1)

---

14 KIRKWOOD, I. E., The comparative embryology of the Cucurbitaceae. Rev. in BOT. GAZETTE **39**:73. 1905.

15 NORÉN, C. O., Ueber Befruchtung bei *Juniperus communis*. Vorläufige Mitteilung. Arkiv. Bot. Svensk. Vetens. Akad. **3**: pp. 11. 1904.

16 SLUDSKY, N., Ueber die Entwickelungsgeschichte des *Juniperus communis*. Vorläufige Mitteilung. Ber. Deutsch. Bot. Gesells. **23**:212–216. *pl. 6*. 1905.

17 LILIENFELD, M., Ueber den Chemotropismus der Wurzel. Ber. Deutsch. Bot. Gesells. **23**:91–96. 1905.

traumatic disturbance due to resistance offered by gelatin surface to entering root; (2) positive aerotropism because of the stratum of air between the gelatin blocks; (3) diffusion of stimulating substances from one block to the other. In the author's improved method, only one large circular block of gelatin is used. After a cavity is made in the center of the block, the seedlings are planted in the gelatin at varying distances from the margin of the cavity, and into the latter the stimulating substance is then placed. By using this method negative responses were obtained in cases corresponding to which positive responses were obtained with the method of NEWCOMBE and RHODES. The former responses are regarded as chemotropic, while the latter are considered traumatropic.—RAYMOND H. POND.

THE GREATEST GAP in our knowledge of the morphology of Coniferales is in connection with the Araucarineae. THOMSON,[18] whose interesting work on the megaspore-membrane of gymnosperms has been noted, has published a preliminary statement of the results of his investigation of the tribe. The conspicuous features are the supernumerary nuclei found in the pollen tube, in one case reaching thirty in number; the failure of the pollen grains to reach the micropyle, lodging at the distal end of the scale and sending out their tubes from that point; the unusual freedom of the nucellus from the integument; and the peculiar arrangement and development of the archegonia, not described in this notice. The anatomical details also indicate a peculiar isolation of the tribe among Coniferales. The forthcoming monograph will be looked for with great interest. —J. M. C.

SCOTT[19] has discovered the sporangia of *Stauropteris Oldhamia*, a common plant of the English Coal-measures, which has been regarded as a much branched and naked rachis of a fern leaf. The ultimate branchlets are exceedingly numerous and slender, "occurring in dense, faggot-like groups." SCOTT now finds that these branchlets bore terminal sporangia of the ordinary fern type, except that there is a terminal stomium and no annulus. There is a suspicion that these may be the microsporangia of a pteridosperm, especially since the ovules of that group, so far as found attached, are also terminal upon ultimate branchlets. Another suggestion would be that such a position of sporangia attained among true ferns accounts for its occurrence among pteridosperms.—J. M. C.

IN A LIST of some unrecorded stations for New Zealand plants, COCKAYNE[20] includes *Carex Darwinii urolepis*, a plant hitherto recorded as occurring only in Patagonia, thus adding another form common to the floras of South America and New Zealand.—J. M. C.

---

18 THOMSON, R. B., Preliminary note on the Araucarineae. Science N. S. **22**:88. 1905.

19 SCOTT, D. H., The sporangia of *Stauropteris Oldhamia* Binney. New Phytol. **4**:114–120. *figs. 2.* 1905.

20 COCKAYNE, L., Some hitherto-unrecorded plant habitats. Trans. N. Z. Inst. **37**:361–367. 1905.